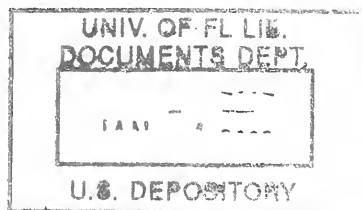


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RESEARCH AND DEVELOPMENT BOARD

HISTORY AND FUNCTIONS



**THE NATIONAL MILITARY ESTABLISHMENT
RESEARCH AND DEVELOPMENT BOARD**

WASHINGTON, D. C.

1 JUNE 1948

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CHIEF OF BUREAU

DEPARTMENT OF JUSTICE



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RESEARCH AND DEVELOPMENT BOARD

MEMBERS OF THE BOARD

Dr. VANNEVAR BUSH, Chairman.

President, Carnegie Institution of Washington.

General JACOB L. DEVERS,
Chief, Army Field Forces.

Vice Admiral JOHN DALE PRICE,
Deputy Chief of Naval Operations (Air).

Major General A. C. McAULIFFE,
Deputy Director for Research and Development, General Staff, U. S. Army, Logistics
Division.

General JOSEPH T. McNARNEY,
Commanding General, Wright-Patterson Air
Force Base.

Vice Admiral EARLE WATKINS MILLS,
Chief of Bureau of Ships.

Major General L. C. CRAIGIE,
Director of Research and Development, Office,
Deputy Chief of Staff for Materiel, USAF.

SECRETARIAT

Dr. L. R. HAFSTAD,
Executive Secretary.

Mr. F. H. RICHARDSON,
Deputy Executive Secretary.

Rear Admiral JOHN HAZARD CARSON,
Navy Secretary.

Brigadier General J. F. PHILLIPS,
Air Force Secretary.

Brigadier General R. W. CRICHLLOW, Jr.,
Army Secretary.

CHAIRMEN AND EXECUTIVE DIRECTORS OF COMMITTEES

Committee on Aeronautics

Mr. HARTLEY ROWE, Vice President
and Chief Engineer, United Fruit Co.,
Chairman.

Mr. J. B. JACOB, *Executive Director.*

Committee on Basic Physical Sciences

Dr. W. V. HOUSTON, President, Rice
Institute.

Dr. MARTIN GRABAU.

Committee on Electronics

Dr. J. A. STRATTON, Director, Research
Laboratory of Electronics, Massachusetts
Institute of Technology.

Mr. NORMAN L. WINTER.

Committee on Geographical Exploration

Dr. JOHN K. WRIGHT, Director, American
Geographical Society.

Dr. SIDNEY PAIGE.

Committee on Geophysical Sciences

Dr. ROLAND F. BEERS, President, Geo-
technical Corp.

Dr. C. S. PIGGOT.

Committee on Guided Missiles

Dr. FREDERICK L. HOVDE, President,
Purdue University.

Mr. KARL KELLERMAN.

Committee on Human Resources

Dr. DONALD G. MARQUIS, *Chairman*,
Department of Psychology, University of
Michigan.

Dr. LYLE H. LANIER.

Committee on Medical Science

Dr. FRANCIS G. BLAKE, Sterling Pro-
fessor of Medicine, Yale University.

Dr. JOSEPH F. SADUSK, Jr.

Committee on Navigation

(Appointments not yet made.)

Committee on Ordnance

Mr. F. C. CRAWFORD, President, Thomp-
son Products, Inc.

Mr. R. B. WRIGHT.

Special Committee on Technical Information

(Appointments not yet made.)

RESEARCH AND DEVELOPMENT BOARD

HISTORY AND FUNCTIONS

The Research and Development Board, authorized by section 214 of the National Security Act of 1947, was formally set up within the National Military Establishment upon the appointment of Dr. Vannevar Bush as Chairman on 30 September 1947. The new Board held its first meeting 19 December 1947, at which time the credentials of all members were accepted by the Board.

Under the provisions of the National Security Act the Board is directed:

“(1) to prepare a complete and integrated program of research and development for military purposes;

(2) to advise with regard to trends in scientific research relating to national security and the measures necessary to assure continued and increasing progress;

(3) to recommend measures of coordination of research and development among the military departments, and allocation among them of responsibilities for specific programs of joint interest;

(4) to formulate policy for the National Military Establishment in connection with research and development matters involving agencies outside the National Military Establishment;

(5) to consider the interaction of research and development and strategy, and to advise the Joint Chiefs of Staff in connection therewith; and

(6) to perform such other duties as the Secretary of Defense may direct.”

The directive¹ outlining the terms of reference under which the RDB will operate was approved by the Secretary of Defense on 18 December 1947.

The RDB was preceded by an earlier agency, the Joint Research and Development Board which had been organized directly under the Secretaries of War and the Navy by charter 6 June 1946 to coordinate the research programs of the War and Navy Departments and to carry on some of the functions of the Joint Committee on New Weapons and Equipment of the Joint Chiefs of Staff, which it superseded.

The organizational structure of the RDB is essentially the same as that of the former JRDB, the major supporting agencies being:

(1) Committees and panels to consider specific problems in the many fields of science and weapon technology. Generally, the objective of committees is the continuing study, evaluation, improvement and allocation of the broad problems and programs of research and development in relation to the over-all aims of the national defense effort and to the available and potential store of scientific information, personnel and facilities, leading to the formulation of integrated programs in their respective fields.

¹ RDB 1/5.

(2) The Secretariat to provide executive and administrative action required in the conduct of the Board and in the implementation of policies and directives in accordance with approved procedures. The Secretariat consists of the Executive Secretary, the Deputy Executive Secretary, and the three military secretaries of the Board, together with two supporting divisions: the Planning Division and the Programs Division. The Executive Council, consisting of the five secretaries of the Board and the directors of the Planning and Programs Divisions, aids and advises the Executive Secretary and acts as a board of review of committee actions to assure that assignments have been fully completed.

FUNCTIONS OF THE COMMITTEES

Committee on Aeronautics

The principal function of the Committee on Aeronautics is to explore new possibilities in the general aviation field and to coordinate the efforts of the three military departments toward investigating such possibilities and developing new and improved aerial weapons. To this end it must establish a unitary program of research and development in the aeronautical field and maintain a continuing evaluation of budgetary projects to implement that program.

Committee on Basic Physical Sciences

The Committee on Basic Physical Sciences evaluates Service programs relating to basic physical science research and makes recommendations for the allocation and reallocation of projects among the military departments. The Committee considers problems in the fields of fluid dynamics, physics, chemistry, metallurgy and materials, and mathematics. The Committee's interest also includes the very rapid, complex electronic computing machines, such as the ENIAC (Electronic Numerical Integrator Computer).

Committee on Electronics

The Committee on Electronics evaluates and coordinates the research and development plans of the Services and promotes an understanding among their representatives of the problems and programs of each Service so that the accomplishments of every group become available to all. The Committee studies current electronics problems such as air warning, navigation, communications, electronic countermeasures, infrared, radar and prepares unified research and development plans in such areas for Service implementation.

Committee on Geographical Exploration

The purpose of the Committee on Geographical Exploration is to plan and coordinate scientific geographic exploration, either carried on, directed by, or of value to the National Military Establishment, with emphasis on regions where environmental conditions are especially difficult to cope with; to so plan that research is carried out on the nature, distribution, intensity and duration of environmental factors that affect the design and performance of matériel, the physiological efficiency of the troops, and the techniques of operation; to so plan that the results of geographic research are available in appropriate form (texts and maps, etc.) for the use of Joint Staff planners.

Committee on Geophysical Sciences

The Committee on Geophysical Sciences evaluates and coordinates Service programs relating to the geophysical sciences. The Committee is concerned with physics of all natural phenomena associated with the earth, including gaseous, solid, and liquid parts of the earth and such phenomena as affect the earth, and all instruments and techniques employed for the study of these phenomena. Liaison is maintained with other Government agencies, academic institutions, and industrial establishments interested in research and development activities in the geophysical sciences.

Committee on Guided Missiles

The Committee on Guided Missiles is responsible for the preparation of an integrated national program of research and development in the field of guided missiles and for coordination of the work of the three military departments to this end. Aided by its panels and special consultants, the Committee studies the actual and potential technical contributions of existing guided missile and related projects, intelligence information on foreign developments, future technical probabilities leading to the establishment of reasonable performance goals and questions of suitable and necessary facilities to support the entire program. Recommendations are made regarding the effort necessary in the related scientific fields of aerodynamics, propulsion, guidance, control, warheads, fuses, launching, range instrumentation, etc., to the end that a proper balance in emphasis will be achieved in an over-all program of guided missile research and development that is sound from military, technical, and budgetary standpoints.

Committee on Human Resources

The Committee on Human Resources is concerned with research and development related to human behavior and manpower resources. The Committee considers research and development on military problems in the following fields: psychophysiology, including human factors in the design and operation of equipment; personnel assessment and training; manpower resources, including population characteristics, methods of estimating supply and requirements; human relations, including group leadership and morale, public opinion and propaganda, analyses of cultures.

Committee on Medical Science

The Committee on Medical Science is concerned with the survey, analysis and evaluation of all aspects of research and development activities in the field of medical and allied sciences, both within and without the Military Establishment, for the purpose of formulating an adequate, and efficient and integrated program of research and development in the field of medical science as applied to the needs of the departments of the National Military Establishment.

Committee on Navigation

The Committee on Navigation is concerned with all aspects of research and development activities in connection with the devices, systems and techniques applicable to the problems of land, marine and air navigation and traffic control. The Committee's objectives are to implement the directive of the Board in the fields of air, marine and land navigation aids, and to coordinate the research and development programs of the National Military Establishment with those of the Department of Commerce and the Treasury Department (U. S. Coast Guard) in the field of navigation aids.

Committee on Ordnance

The Committee on Ordnance evaluates the research and development programs of ordnance weapons and countermeasures of the three military departments and will make recommendations to insure that major effort is placed on the most urgent or important phases. It assesses the adequacy of the programs including the availability of technical personnel, facilities, and equipment; determines whether there are gaps in the programs, both in plan and execution; and seeks to eliminate undesirable duplication, if such should exist. The Committee's field of interest excludes atomic energy but includes other types of explosives, land or water mines and means and devices for planting and countering them, ammunition, bombs, rockets, and projectiles (excluding guided missiles), launching devices and equipment, conventional torpedoes and tubes, depth charges and projectors, armor, guns, and gun mounts, fire control systems, ballistics, chemical weapons, pyrotechnics, and other equipments and material identified in the field of ordnance.

Special Committee on Technical Information

The Special Committee on Technical Information has been established to promote the effective exchange of technical information among the agencies of the National Military Establishment. It studies the problem of collecting, correlating, reproducing and disseminating technical information potentially useful in the research and development programs of the National Military Establishment. Similar activities in other Government agencies and in universities and independent organizations are followed, and active research into the scientific bases of information organization is encouraged. The Committee will suggest procedures for standardizing technical nomenclature, for increasing effective utilization of technical reports and will recommend more effective methods as they are brought to light.

in the field of navigation and shipping.

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The Special Committee on Technical Information has been established to promote the effective exchange of technical information among the members of the National Military Establishment. It studies the problem of the exchange of technical information and determines the means by which the exchange can be effected. Similar activities in other Government agencies and in universities and independent organizations are followed and active measures are taken to bring these of information agencies to cooperate with the Committee and to develop procedures for standardizing technical matters between the various agencies. The utilization of technical reports and will recommend more effective means by which they are brought to light.

BIOGRAPHICAL NOTES

MEMBERS AND SECRETARIAT OF THE BOARD

VANNEVAR BUSH

Chairman of the Board

Dr. Vannevar Bush, president of the Carnegie Institution of Washington since 1938, was formerly associated with the Massachusetts Institute of Technology, serving on the faculty of electrical engineering from 1919 to 1932, at which time he became vice-president of the Institute and dean of the School of Engineering. In 1940 the President of the United States named Dr. Bush chairman of the National Defense Research Committee, and in 1941, when the Office of Scientific Research and Development was formed, Dr. Bush was appointed director of that agency. During the war Dr. Bush also served as the civilian chairman of the Joint Committee for New Weapons and Equipment of the Joint Chiefs of Staff, and shortly after the end of the war became chairman of the newly created Joint Research and Development Board at the request of the Secretaries of War and Navy. Following the creation of the Research and Development Board within the National Military Establishment in 1947 Dr. Bush was named by the President of the United States to the chairmanship of the Board.

J. L. DEVERS

General, United States Army

Member of the Board

General Devers, chief of the Army Field Forces, has had a distinguished Army career. Just prior to Pearl Harbor, he was chief of the Armored Force at Fort Knox. In May 1943 he was named commanding general of the U. S. Forces in the European Theater. He assumed the command of the North African Theater of Operations in December 1943, becoming deputy commander-in-chief, Allied Force Headquarters and deputy supreme commander, Mediterranean Theater of Operations in January 1944. When the brunt of the war shifted to the European Theater, General Devers was made commanding general, 6th Army Group in France September 1944.

He has been commanding general of the Army Ground Forces (redesignated Army Field Forces) since July 1945. The headquarters of the Army Field Forces was recently moved from Washington to Fort Monroe, Virginia, where the General has charge of important activities relating to training, organizational planning and administration.

ANTHONY C. McAULIFFE
Major General, United States Army
Member of the Board

Major General McAuliffe, famous for his defense of Bastogne during the Battle of the Bulge, joined the One Hundred and First Airborne Division early in World War II and subsequently sailed with that division to the European Theater of Operations. During the Normandy invasion he parachuted into France and in the airborne invasion of Holland commanded the Glider Echelon. In December 1944 General McAuliffe commanded the One Hundred and First Airborne Division and the attached troops in the defense of the key road center of Bastogne. Later he commanded the One Hundred Third Infantry Division when the division broke through the Siegfried Line and raced through Germany and Austria to capture Innsbruck and the Brenner Pass and make the historic link up with the American Fifth Army troops from Italy.

In January 1946 General McAuliffe became ground forces adviser to Admiral Blandy, commander of Joint Army-Navy Task Force One for Operation Crossroads, and served at Bikini throughout the atomic bomb tests. In August 1946 he returned to the United States to become Army secretary of the Joint Research and Development Board, a position which he held until January 1948 when he was appointed deputy director for research and development, Logistics Division, General Staff.

EARLE WATKINS MILLS
Vice Admiral, United States Navy
Member of the Board

Vice Admiral Mills, chief of the Bureau of Ships since 1 November 1946, has long been associated with ship design and construction. From 1933 to 1937 he served in the Design and Construction Division of the Bureau of Engineering and from 1937 to 1939 he was engineer officer on the staff of the Commander, Destroyers, Battle Force. In 1939 Admiral Mills returned to the Bureau of Engineering as engineering assistant to the head of the Design and Construction Division, and in 1940 when the Bureau of Engineering was consolidated with the Bureau of Construction and Repair to create the Bureau of Ships, he continued in the same capacity in the new bureau. In 1940 he was detailed as assistant naval attaché to the American Embassy in London for several months to study ship and machinery damage to the British fleet from bombs and mines. Upon his return to the United States he resumed duty in the Design Division and in November 1942 Admiral Mills was designated assistant chief of the Bureau of Ships.

Admiral Mills served on Board the USS MINNESOTA during World War I, and subsequently in destroyers, battleships and cruisers. From 1922 to 1924 he did post-graduate work in electrical engineering at Columbia University, receiving a master of science degree in naval engineering. In 1944 he received the honorary degree of doctor of engineering from the University of Louisville.

JOHN DALE PRICE
Vice Admiral, United States Navy
Member of the Board

Vice Admiral Price, deputy chief of Naval Operations (Air) since January 1948, has served continuously with naval aviation since 1920. Early in World War II he assumed command of the Naval Air Station, Jacksonville, Florida, and in 1943 was ordered to duty as commander, Fleet Wing Two, which participated in the Marshall Islands campaigns.

In April 1945 he assumed command of Fleet Air Wing One which employed the "Bat" (the first fully automatic guided missiles to be used successfully in combat by any nation). In July 1945 Admiral Price was ordered to duty as commandant, Naval Operating Base, Okinawa, and in February 1946 returned to the United States as commander, Fleet Air Alameda, California. On 31 August 1946, he became commander, Air Force, Pacific Fleet, and on 19 January 1948 became deputy chief of Naval Operations (Air).

Following flight training in 1920, Admiral Price served in various commands, including McCook Field, Dayton, Ohio, where he was naval representative in aviation experiments and in 1922 was designated inspector of naval aircraft. In 1923, while in command of the airplane D. H.-A-6377, he broke existing flight endurance records, and in 1925 he was commended by the Secretary of the Navy for experimental flying aboard the aircraft carrier USS LANGLEY.

JOSEPH T. McNARNEY
General, United States Air Force
Member of the Board

General Joseph T. McNarney, commanding general of Wright-Patterson Air Force Base, Dayton, Ohio, has served more than thirty years with the United States Air Force and is a combat veteran of both world wars. In January 1942 General McNarney was appointed chairman of a War Department committee to effect a reorganization of the Army, and in the following March was designated deputy chief of staff of the United States Army.

Named deputy supreme allied commander in the Mediterranean Theater of Operations and commanding general of the United States Army Forces in that theater in October 1944, he became acting supreme allied commander in the Mediterranean Theater in September 1945. The following December he succeeded General of the Army Dwight D. Eisenhower as commanding general of the U. S. Forces in the European Theater and commander-in-chief of the U. S. Forces of Occupation in Germany. On 15 March 1947, General McNarney became senior member of the United Nations Military Staff Committee, with headquarters in New York City. He was assigned to Wright Field on 1 October 1947.

LAURENCE C. CRAIGIE
Major General, United States Air Force
Member of the Board

Major General Craigie, director of research and development in the Office of Deputy Chief of Staff for Matériel at USAF headquarters, supervised and directed the World War II experimental aircraft development program for the Army Air Forces. Stationed at Wright Field almost continuously from July 1934 to March 1943, General Craigie served in a series of important assignments in the Engineering Division, culminating in his assignment as chief, Aircraft Projects Branch. He became the first pilot of the armed forces of the United States to fly a jet-propelled plane when he piloted the XP-59 at Muroc Dry Lake, California, in October 1942.

Assigned to field duty in March 1943, General Craigie was transferred to the North African Theater of Operations a year later as commanding general of the Sixty-third Fighter Wing of the Twelfth Air Force and as allied air commander, Corsica. Shortly after his return to the United States in November 1944, he became deputy chief of the Engineering Division of the Air Technical Service Command at Wright Field, serving in that capacity until August 1945 when he was appointed chief of the division. In August 1947, General Craigie was designated chief of the Research and Engineering Division AC/AS-4 at Army Air Forces headquarters in Washington, becoming director of research and development on 10 October 1947.

L. R. HAFSTAD
Executive Secretary of the Board

Dr. Hafstad, on leave of absence as director of research of the Applied Physics Laboratory, The Johns Hopkins University, and director of the Institute for Cooperative Research of The Johns Hopkins University, was appointed executive secretary of the Research and Development Board in July 1947. He was associated with the Department of Terrestrial Magnetism of the Carnegie Institution of Washington from 1928 to 1946, when he was named director of research of the Applied Physics Laboratory. During World War II he was vice chairman of Section T of the Office of Scientific Research and Development which carried out research and development of the VT radio proximity fuze for the Army and the Navy.

In 1931 Dr. Hafstad was co-winner of the American Association for the Advancement of Science award for his research on the 1,000,000-volt vacuum tube, and in 1946 was awarded the United States Medal for Merit for his war-time activities in connection with the development of ordnance devices for the Army and the Navy.

FRANCIS H. RICHARDSON
Deputy Executive Secretary of the Board

A staff member of the Radiation Laboratory of the Massachusetts Institute of Technology, Mr. Richardson actively participated in the original development of radar equipment. In 1942, with the rank of colonel, he was assigned the responsibility for staff supervision of electronics research for the Army Air Forces. Upon separation from the Army in 1946, Mr. Richardson became director of the Cambridge Field Station, an Army Air Corps installation engaged in electronics research. In November 1946 he became administrative secretary for the Joint Research and Development Board of the Army and the Navy, continuing with the Board following its reorganization under the National Security Act of 1947 as deputy executive secretary.

A Canadian by birth, Mr. Richardson served in World War I as an RAF pilot. He holds a degree in engineering from the University of Edinburgh, Scotland.

JAMES F. PHILLIPS
Brigadier General, United States Air Force
Air Force Secretary of the Board

Brigadier General Phillips has long been associated with military aeronautical research and development. From 1929 to 1935 he was engaged in experimental work in aerial photography and mapping at Wright Field, Dayton, Ohio. Following duty with the Air Corps Detachment CWS Research and Development at Edgewood Arsenal and at Kelly Field, Texas, from 1937 to 1940, he served until August 1945 as staff officer in A-4, Air Corps headquarters; his special concern being staff supervision of Air Corps research and development activities and the production of aircraft. On completion of this assignment he became commanding general, Philippine Air Matériel Area, Nichols Field, and in September 1946 became assistant chief of staff, A-4, Pacific Area Command, Tokyo, Japan.

Upon his return to the United States, General Phillips was assigned as assistant chief, Procurement Group, SS&P Division, Army General Staff, serving in this capacity from March 1947 until he assumed the duties of Air Force secretary of the Research and Development Board on 16 December 1947.



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JOHN HAZARD CARSON
Rear Admiral, United States Navy
Navy Secretary of the Board

From July 1944 to June 1946 Rear Admiral Carson commanded the U. S. Naval Torpedo Station, Newport, Rhode Island, upon which station the Bureau of Ordnance conferred the "Naval Ordnance Development Award" in recognition of the distinguished service of the organization in the research and development of naval ordnance. On 27 July 1946 Admiral Carson assumed command of Transport Squadron One, Amphibious Forces, Pacific Fleet, and during November and December units of this squadron participated in the first full scale peacetime amphibious training exercises. In February 1947 Admiral Carson reported to duty as commander, Cruiser Division 15, U. S. Pacific Fleet, and on 15 March 1948 was designated Navy secretary of the Research and Development Board.

Admiral Carson served in World War I and has served in all types of naval vessels in various capacities. Following World War I he completed a post-graduate course in ordnance and obtained a master of science degree at the Military Institute of Technology. He served two tours of shore duty at the Naval Proving Ground, Dahlgren, Virginia. On 31 January 1941 he reported for duty as operations officer on the staff of the Commander, Cruisers, Battle Force, and was serving in this capacity, aboard the USS HONOLULU during the Pearl Harbor attack; then he served with southwest Pacific forces in Australian waters for fifteen months. In 1943 he assumed command of the cruiser USS BOSTON which joined the famous Task Force 58 in the Pacific in January 1944.

ROBERT WILLIAM CRICHLLOW, JR.
Brigadier General, United States Army
Army Secretary of the Board

Brigadier General Crichlow has served continuously with the Coast Artillery Corps during his Army career. In September 1939 he was designated a member of the Coast Artillery Board at Fort Monroe and served in that capacity until July 1942 when he became president of the Antiaircraft Artillery Board, Camp Davis, North Carolina. In April 1943 he assumed command of the 57th Anti-aircraft Brigade, Camp Haan, California. He was appointed assistant chief of the Requirements Section, Headquarters Army Ground Forces in March 1944. In September 1945 General Crichlow was designated assistant chief of staff, G-5, USASCOM "C" Yokohama, Japan, becoming deputy commander and chief of staff 14 December 1945. In early 1946 he assumed command of Kobe Base, Japan; upon his return to the United States in April 1948 he was designated Army secretary of the Research and Development Board.

Prepared by:
Programs Division
Editorial Branch

U. S. GOVERNMENT PRINTING OFFICE: 1948